



O-buoys: self-contained, autonomous buoys for long-term observations of atmospheric chemical species in the polar marine boundary layer

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In-situ long-term ocean-based measurements of chemical species in the atmosphere above Polar Ocean surfaces do not exist (except from satellites). Surface based observations are only available from a few land-based observatories and short-term cruises or research aircraft campaigns. Such data are especially important to quantify the seasonal and inter-annual variability in a fast changing ice field that will vary in different regions of the Polar Oceans. By implementing recent developments in instrumentation, power management, and instrumentation control, we will design and construct a weather-tight, self-powered, ice-tethered buoy, integrating different chemical measurement instruments. Our initial target chemical species are 3 key gases: O₃, BrO and CO₂. We plan to deploy these new, specialized buoys at key locations on the Arctic Ocean, collecting year-round data that will be transmitted remotely by wireless communication to home laboratories. In this presentation the key features of the O-buoys will be discussed. The O-buoy program is a contribution to the international IPY-OASIS (Ocean-Atmosphere-Sea Ice-Snow interactions in Polar Regions) program (IPY # 38).